

Handout # 8

Maryland Commission on Climate Change

Mitigation Working Group Meeting #1

DATA Needs Memo



MARYLAND DEPARTMENT OF THE ENVIRONMENT

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Larry Hogan
Governor

Ben Grumbles
Secretary

Boyd Rutherford
Lieutenant Governor

MEMORANDUM

To: Agency Secretaries with reporting requirements under the Greenhouse Gas Reduction Act/Climate Commission

From: Ben Grumbles, Secretary of the Environment and Chair of the Commission
John Quinn, Co-chair of the Commission
Stuart Clarke, Co-chair of the Commission and Co-chair of Mitigation Working Group
Michael Powell, Co-chair of Mitigation Working Group

Date: May 6, 2015

Re: Greenhouse Gas Emission Reduction Updates for GGRA/Climate Commission Reports

As representative of the Maryland Commission on Climate Change, I thank you for all your past and current efforts related to Climate Change. In an effort to complete the requirements of the Greenhouse Gas Reduction Act report (due on October 1, 2015) and the Climate Commission report (due on November 15, 2015) we are asking that you assist with reporting on GHG reduction progress for the programs your agency is responsible for.

In the attached table we list the lead agency for all of the programs listed in the GGRA and the calculation methodology/ metric used during the development of the 2013 GGRA Plan. We are asking that you provide the Commission and MDE an update on these programs and the associated emission calculations no later than June 15, 2015 so MDE can include the revised and updated estimates in the two reports due this fall.

In your response we ask that you provide us with answers to the following:

- What are the reductions to date from your program?
- Do you expect the program to attain the targeted emission reductions by 2020? If not what are the revised reduction projections through 2020?
- Based on revised/updated factors do you expect the program to underperform or overperform? What are the reasons for the adjustments?

The attachment to this memo summarizes the programs, lead agencies, 2013 GGRA Plan reduction estimates and methodology/metrics, and the data sources used to calculate the reductions used for the 2013 GGRA Plan. Please use this as a reference to assist with the questions above.

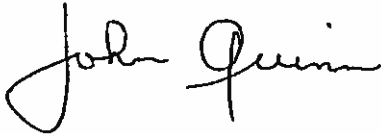


Thank you for your attention to this important matter.

Sincerely,



Ben Grumbles
Chair of the Commission and Secretary of the Environment



John Quinn
Co-chair of the Commission



Stuart Clarke
Co-chair of the Commission and Co-chair of Mitigation Working Group



Michael Powell
Co-chair of Mitigation Working Group

cc: Agency Secretaries with Reporting Requirements under GGRA 2009:

- Joe Bartenfelder, Secretary of Maryland Department of Agriculture
- Mark J. Belton, Secretary of Maryland Department of Natural Resources
- David R. Craig, Secretary of Maryland Department of Planning
- Pete K. Rahn, Secretary of Maryland Department of Transportation
- Devon Dodson, Acting Director, Maryland Energy Administration
- Ken Holt, Acting Secretary, Maryland Department of Housing and Community Development
- David R. Craig, Secretary, Maryland Department of Planning
- Mike Gill, Secretary, Maryland Department of Business and Economic Development
- Alfred W. Redmer, Jr, Commissioner, Maryland Insurance Administration
- C. Gail Bassette, Secretary, Maryland Department of General Services

Enclosure



Policy	Lead Agency	Policy (Program)	Calculation Methodology	Metric	Data Source	GHG Reductions to Date (Mton)	GHG Reduction Potential (Initial) and (Enhanced) * Note if revised
A.1	MEA	EmPOWER: EE in the Residential Sector	All reductions under all (5) EmPOWER programs will be aggregated and compared the 2015 goal reduction of about 11,200 GWh	Per capita annual MWh reduction	http://energy.maryland.gov/em-power3/documents/EmPOWER_PlanningFinalReport2013-01-16.pdf http://energy.maryland.gov/reports.html and EIA data http://www.eia.gov/state/?sid=MD & StateStat: https://data.maryland.gov/goals/energy-efficiency/		
A.2	MEA	EmPOWER: EE in the Commercial and Industrial Sectors	Determine the potential saving in MWh of electricity and an MMBTU of natural gas in the RCI sector and assign a CO ₂ reduction	Per capita annual MWh reduction	http://energy.maryland.gov/reports.html		
A.3	MEA	EmPOWER: EE: appliances and other products	Determine how many Energy Star appliances are sold in MD and assign a CO ₂ reduction factor	# of Energy Star appliances sold	http://energy.maryland.gov/documents/AnAnalysisofUtility-SponsoredHomePerformancewithENERGYSTARProgramsinMaryland.pdf		
A.4	MEA	EmPOWER: Utility Programs	Calculate total annualized energy savings forecasted per utility and compare to (as a percentage) the annualized energy savings 2015 goal	annualized energy savings	PSC Report: http://webapp.psc.state.md.us/intranet/Reports/2014%20EmPOWER%20Maryland%20Energy%20Efficiency%20Act%20Standard%20Report.PDF EIA data http://www.eia.gov/state/?sid=MD		
A.5	MEA	Combined Heat and Power	Determine current and potential MWh from existing CHP in MD and determine potential (based on MEA report)	Potential CHP generation	http://energy.maryland.gov/em-power3/documents/EmPOWER_PlanningFinalReport2013-01-16.pdf		

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B.1	MEA	Maryland Renewable Energy Portfolio Standard	Calculate historic and projected mix of RECs required to meet 2020 RPS compliance. Maryland would need approximately 13.7 million RECs in 2020 which contain approximately 0.16 MtCO ₂ e/MWh. Compared to conventional generation at 0.64 MtCO ₂ e/MWh. The difference is a reduction of 7.36 MMtCO ₂ e.	RECs	https://gats.pjm-eis.com		
B.2	MEA	Fuel Switching	Calculate carbon intensity of both fuel sources and calculate how much electricity is imported in the desired time period	-MWh -CO ₂ /MWh	SAIC Policy ES-3 Page 80, Appendix B PJM EIS data for carbon intensity		
B.3	MEA	Incentives and Grant Programs to Support Renewable Energy	Reductions included under RPS	RECs	MEA provides ongoing technical project assessment and procurement assistance to the DGS and the University System of Maryland https://gats.pjm-eis.com		
B.4	MEA	Offshore Wind Initiatives to Support Renewable Energy	Reductions included under RPS	RECs	MEA provides ongoing technical project assessment and procurement assistance to the DGS and the University System of Maryland https://gats.pjm-eis.com		
C	MDE	Regional Greenhouse Gas Initiative (RGGI)	CO ₂ reduction under revised cap	CO ₂ emissions from RGGI sources	Facility specific emissions from: https://rggi-coats.org/cats/rggi/index.cfm?fuseaction=reportsv2.compliance_summary_rpt&clearfuseattribs=true 2014-2012= 0.48	0.48	3.6 0.0

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D.1	MDE	GHG Power Plant Emission Reductions from Federal Title V Programs	CO2 emissions reported in Certified Emissions Reports	Ton per year of CO2-equivalent	MDE TEMPO reporting site	see below	below
D.1.A	MDE	Boiler MACT	Determine how many boilers complied w/ MACT and what the percent CO2 reduction is given the control efficiency of the improvement	MACT Boilers complying	MDE TEMPO reporting site http://mdewin52.mde.state.md.us:8080/fbi_apps/Controller.jsp?sessionid=DF401AAAE31AD5153667A1E7B8B65AD	0.07	0.07
D.1.B	MDE	GHG New Source Performance Standards (NSPS)	The NSPS for existing plants is referred to as the Clean Power Plan. For MD, it proposes a final target goal of 1,187 lbCO2/MWh. This is a 36.5% reduction in carbon emissions from 2012 levels.	lbCO2/MWh for existing fleet	http://www2.epa.gov/carbon-pollution-standards/2013-proposed-carbon-pollution-standard-new-power-plants	0.0	0.06
D.1.C	MDE	GHG PSD Permitting Program	PSD is triggered when a new source reports a PTE of 100,000 tpy of CO2-equivalent or modifications least 75,000 tons per year	CO2e emissions from all PSD permitted facilities in MD	MDE TEMPO reporting site http://mdewin52.mde.state.md.us:8080/fbi_apps/Controller.jsp?sessionid=DF401AAAE31AD5153667A1E7B8B65AD	0.0	0.06
D.2	DHCD	Main Street	Confirm allocation and expenditure of funds from Energy Efficiency and Conservation Block Grant managed by DHCD. There are three major assumptions: cost of the equipment, annual distribution of how the funds are spent, and percent reduction in GHG emissions for each energy efficiency upgrade.	No of EE projects completed, reduction in energy consumption	DHCD report on funding: http://www.dbm.maryland.gov/budget/FY2016Testimony/S00.pdf		

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D.3	DHCD	Weatherization and EE for affordable housing	(Number of retrofits)*(current energy use/property)*(% reduction) = energy savings. Actual numbers: (8,865 retrofits)*(87.1 MMBtu/property)*(32% reduction) = 247,093 MMBtu savings	cost per retrofit and number of retrofits	http://www.dhcd.state.md.us/web/site/Programs/wap/Default.aspx		
E.1.A	MDE	Maryland Clean Cars Program	The Clean Cars Program includes all the federal and MD fuel economy programs initiated between 2008- 2025. These reductions also include proposed 2017-2025 model year federal fuel economy standards.	fleet-wide average MPG standard and turnover rates of existing fleet	http://www.rita.dot.gov/bis/sites/rita.dot.gov/bis/files/publications/national_transportation_statistics/index.html#chapter_4	2.8	4.3
E.1.B	MDOT	Corporate Average Fuel Economy (CAFÉ) Standards: Model Years 2008-2011	The CAFÉ standard is analyzed with MOVES. To analyze the GHG emissions impacts, the MOVES2010a fuel consumption rate was adjusted by holding constant the emission rates for post-2007 model years.	fleet-wide average MPG standard and turnover rates of existing fleet	http://www.mdot.maryland.gov/Office_of_Planning_and_Capital_Programming/CTP/CTP_15_20/Index.html		
E.1.C	MDE	Federal Medium and Heavy Duty GHG Standards	the full benefits of the program depend on the turnover of the Medium and Heavy Duty Truck fleet	MPG and turnover rates of existing fleet	http://www.rita.dot.gov/bis/sites/rita.dot.gov/bis/files/publications/national_transportation_statistics/index.html#chapter_4	0.13	0.88
E.1.D	MDOT	Renewable Fuels Standard	Since its an EPA program, we will rely on uses estimates provided by EIA, to determine the total volume of renewable fuel expected to be used in the U.S.	Gallons of renewable fuel consumed	http://www.eia.gov/biofuels/biodiesel/production/archive/2013/2013_12/biodiesel.cfm		

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E.2.A	MDOT	ON Road Technology	MDOT, MAA, MPA will need to provide info and data about numerous programs in order for MDE to quantify the reductions of each of these initiatives	Several metrics are required	http://www.mde.state.md.us/pr/ogams/Air/ClimateChange/Do/uments/2011%20Draft%20Plan/D_Implementation_Plan.pdf		
E.2.B	MDOT	Airport Initiatives	MDOT, MAA, MPA will need to provide info and data about numerous programs in order for MDE to quantify the reductions of each of these initiatives	Several metrics are required	http://www.mde.state.md.us/pr/ogams/Air/ClimateChange/Do/uments/2011%20Draft%20Plan/D_Implementation_Plan.pdf		
E.2.C	MDOT	Port Initiatives	MDOT, MAA, MPA will need to provide info and data about numerous programs in order for MDE to quantify the reductions of each of these initiatives	Several metrics are required	http://www.mde.state.md.us/pr/ogams/Air/ClimateChange/Do/uments/2011%20Draft%20Plan/D_Implementation_Plan.pdf		
E.2.D	MDOT	Freight and Freight Rail Strategies	MDOT, MAA, MPA will need to provide info and data about numerous programs in order for MDE to quantify the reductions of each of these initiatives	Several metrics are required	http://www.mde.state.md.us/pr/ogams/Air/ClimateChange/Do/uments/2011%20Draft%20Plan/D_Implementation_Plan.pdf		

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E.3	MDOT/ MEA	Low Emitting Vehicle Initiatives	Reducing VMT of non low-GHG vehicles and improving system efficiency falls under the umbrella transportation technologies (E2). MTA will purchase diesel-hybrid electric buses, incentivize use of low-GHG vehicles, low-carbon fuels and infrastructure. As of December 1, 2014 there were 5,544 PEVs registered in Maryland, up from 1,800 PEVs in October 2013. MPG of PEV vs conventional will result in a good GHG reduction estimate	# of LEVs and VMT and transportation system carbon intensity	http://www.mdot.maryland.gov/Office_of_Planning_and_Capital_Programming/Electric_Vehicle/Documents/2015_Interim_Report.pdf http://www.mde.state.md.us/prgrams/Air/ClimateChange/Documents/2011%20Draft%20Plan/D_Implementation_Plan.pdf	0.04	0.0 0.27
F.1	MDOT	Public Transportation Initiatives	Quantify transit use in Maryland with MDOT data	Transit use	http://www.governing.com/gov-data/transportation-infrastructure/public-transportation-agency-ridership-statistics-cities-metro-areas.html		
F.2	MDOT	Intercity Transportation Initiatives	The MARC Growth and Investment Plan has funded the construction of a Baltimore intercity bus terminal which is being constructed (Nov 2014). Planning and engineering work has begun for BWI MARC/Amtrak Station improvements and the Baltimore and Potomac tunnel improvements	VMT reduction	http://mgip-update.com/images/presentations/mgip_update_2013-09-13.pdf		

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G	MDOT	Pricing Initiatives	MD implemented the Baltimore regional ride share and guaranteed ride home programs and WashCOG's Commuter Connections program. The Inter-county Connector and I-95 Express Toll Lanes have been implemented. Also included are State funded commute alternative incentive programs in the Baltimore and Washington regions.	VMT reduction	http://www.commuterconnections.org/wp-content/uploads/2014-TERM-Evaluation-Analysis-Report-FINAL-111814.pdf		
H.1	MDE/MDOT	Evaluate the GHG Emissions Impacts from Major New Projects and Plans	GHG emissions impact of implementing this program was not quantified.	VMT reduction	Multi-Sector work group document being developed by WashCOG.	0	0
H.2	MDOT	Bike and Pedestrian Initiatives	Projects underway (funded) Complete Streets, Projects supporting completion of the Statewide transportation trails network, Improved bicycle and pedestrian access to transit facilities, Implementation of a number of local and regional sidewalk, trail, recreation and enhancement programs. MSHA Sidewalk Program and Community Safety and Enhancement Programs	Increase trips by bike and walking	http://www.mdot.maryland.gov/Office_of_Planning_and_Capital_Programming/CTP/CTP_13_18/CTP_Documents/Final_FY_13_18_CTP.pdf		
I.1	DNR	Managing Forests to Capture Carbon	the total managed forest area is multiplied by an applicable sequestration rate to obtain the yearly CO2-equivalent for the practices	CO2e sequestered	http://esm.versar.com/pprp/bibliography/PPRP-159/PPRP_159.pdf		

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1.2	DNR	Planting forests in Maryland	afforestation and reforested acreage multiplied by CO2 sequestration rate	CO ₂ e sequestered	http://www.fs.fed.us/ne/newtown_square/publications/other_publications/OCR/ne_2004_smith001.pdf		
1.3	DNR	Creating and protecting wetlands and waterway borders to capture carbon	Sequestration Rate multiplied by wetland acreage, current and future	CO ₂ e sequestered	https://www.estuaries.org/pdf/2010conference/monday15/galleon2/session3/strebel.pdf		
1.4	DNR	Biomass for energy production	Determine number of wood fired units (all sectors). Each displaces x gallons of heating oil, with y tons of wood chips. Conversion displaces x(y) tons of CO ₂ -equivalent.	Number of wood-fired units	http://www.pinchot.org/gp/Maryland_Biomass		
1.5	MDA	Conservation of agricultural land for GHG benefits	Determining the amount of land protected in each year by using an estimate of the annual rate of agricultural land lost (11,813 acres/year, determined from NRI Maryland data). Multiplying the soil carbon content (assumed to be 0.017 MMTc per 1,000 acres) on the protected land by 50% and by 75% (fraction of soil carbon lost); and converting the soil carbon lost to CO ₂ by multiplying by 44 by 12.	Acres of AG land protected	http://www.mde.state.md.us/prgrams/Air/ClimateChange/Documents/www.mde.state.md.us/assets/document/Air/ClimateChange/Appendix D Mitigation.pdf		

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I.6	DNR	Increasing urban trees to capture carbon	Identify a sample of MD trees, determine carbon sequestration per/yr, determine annual number of trees planted	Number of trees planted	http://www.dnr.state.md.us/forests/programs/urban/		
J.1	DNR	Creating ecosystems markets to encourage GHG emission reductions	The Nutrient Trading Program (MDA) will promote carbon sequestration and will provide a platform for "stacking" of carbon	See nutrient trading	http://www.dnr.state.md.us/dnr/news/pdfs/ESWGFinalReportOct2011.pdf		
J.2	MDA	Nutrient trading for GHG benefits	quantify the carbon sequestration potential associated with Maryland's nutrient trading program and analyze the magnitude of marketable carbon credits	carbon sequestration and marketable supply	http://cier.umd.edu/documents/Multiple_Ecosystem_Markets_MD.pdf		
K	DHCD	Building and Trade Codes	The codes are approximately 15% improvements per 3-year cycle. A 15% reduction in electricity and fuel consumption in the commercial building sector is converted to GHG reduction	Percent reduction in energy consumption	http://mdcodes2.umbc.edu/files/COMAR%2005.02.07%20MBPS.pdf		
L	MDE	Zero Waste	The EPA WARM model calculates the benefits of recycling and source reduction (waste diversion) end-of-life waste management practices and is based on a life-cycle of a product.	pounds per person per day waste generation rate and an average recycling rate equal to the 2006 - 2008 recycling rate through 2020	Excel file from LMA: "zero waste projections UPDATED PROJECTIONS use 4th tab.xls"	1.5	2.8* (estimated based on enhanced revision) 3.5 (revised)

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M.1	DGS	Leadership-By-Example; State of Maryland initiatives	Calculate individual emissions from following programs 1) eFootprint 2) Local Government 3) Schools 4) DGS Environmental Performance Contracts and Public School Energy Efficiency Initiatives 5) LEED cert buildings	Individual metrics	http://www.acecc.org/energy-efficiency-sector/state-policy/maryland/66/all/202		
M.3	MDE	Leadership-By-Example - Maryland Colleges and University	actual data and projections from each school are used. If only one data point was available for the base year, then each subsequent year was assumed to increase by 2 percent or $X_i * (1.02)$, where X is the value for year . If a baseline projection was not available for 2020, the amount of GHG emissions is projected using the method of least squares to fit a straight line to the arrays of known variables to determine the GHG emissions according to year	Estimated reductions from respective university GHG plans	http://www.dgs.maryland.gov/Energy/Database/EnergyDatabasePublic.html	0.37	0.37
M.4	MDE	Leadership-By-Example - Local Government	Calculation uses the 7 counties that have completed inventories and goals. The goals are reduced to an annual reduction per county (total goal divided by number of years). The annual rate is then multiplied by the GGRA Goal year (2020) minus the base year of the county	Reduction goals compared to reported GHG emissions	http://www.dnr.state.md.us/sustainability/network.asp	0.10	0.25

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M.4	MDE	Leadership-By-Example - Federal Government	Executive Order 13514, issued October 8, 2009 calls on the federal government to reduce its GHG emissions from direct sources (e.g. federal buildings and fleets) to 28 percent below 2008 levels by 2020 and implement aggressive energy and water efficiency programs	Reduction goals compared to reported GHG emissions	http://catalog.data.gov/dataset/fy2010-federal-government-greenhouse-gas-inventory-by-agency/resource/65622291-d6ab-4e46-ad33-11bbbea67f0d	0.15	0.27 0.27
N.1	MDE	Voluntary Stationary Source Reductions	MD companies take voluntary early and provide a good faith estimate of potential emission reductions.	Estimated GHG reductions	http://rmienergysolutions.com/about-us/ https://www4.eere.energy.gov/sceaction/topic-category/energy-use-data-access		
N.2	MDA	Buy local for GHG benefits	Quantify the sale of locally grown products grown on Maryland's agricultural lands	Sale of MD produce	http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELPRDC5099252		
N.3	MIA	Pay-As-You-Drive® Insurance in Maryland	use-based insurance program for private passenger automobiles to reduce VMT	VMT	http://www.mdot.maryland.gov/Office_of_Planning_and_Capital_Programming/Plans_Programs_Reports/Documents/Climate_Change_2011.pdf		
N.4	DBED	Job creation and economic development initiatives related to climate change	This program doesn't have any quantifiable GHG reductions				

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O.1	MDE/ MDOT	The Transportation Climate Initiative	11 participating states take action in four core areas: clean vehicles and fuels, sustainable communities, freight efficiency, and information and communication technologies to reduce GHGs.	Reduce VMT and GHG from transportation sector	http://www.e2es.org/docUpload/s/pev-northeast.pdf	0.01	0.02 0.02
O.2	MDE	Clean Fuel Standard	Low Carbon Fuel Standard (LCFS) is a collaboration between 11 states to have a reduction of at least 10 percent in the carbon intensity of transportation fuels by 2020	regional fuel suppliers to demonstrate that the average carbon intensity of fuels used reduced over time	California: http://www.arb.ca.gov/fuels/lcfs/lcfs.htm	0	0
P.2	MDP	Priority Funding Area (Growth Boundary) related benefits	75 percent of Maryland's new development between 2011 and 2020 will be compact development. 25 percent / 75 percent split between new multi-family and single-family homes, 80 percent of homes located within the Priority Funding Area, 84 percent of residential lots within PFA equal to or smaller than 1/4-acre	# of projects in PFA that reduce sprawl. Calc GHG reductions of PFA project vs non-PFA	http://planning.maryland.gov/OurProducts/PublicationsPlain.shtml#annual		
Q	MDE	Outreach and public education	Outreach and public education are supporting efforts to other programs. They do not exist as separate, quantifiable entities	actual gross annualized energy savings in MWh	http://www.madeclear.org/	0.02	0.03 0.03